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Dave Campbell
Editorial Content Chief, *WOOD* magazine



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Bow-Front Display Case

Go ahead and build one—it's easier than you might think!

With its adjustable framed-glass shelves and open sides, this easy-to-build display case will let your collectibles shine. But you won't have to collect a shopful of tools to build it, just the ones shown on the *next page*.

Build the top and bottom

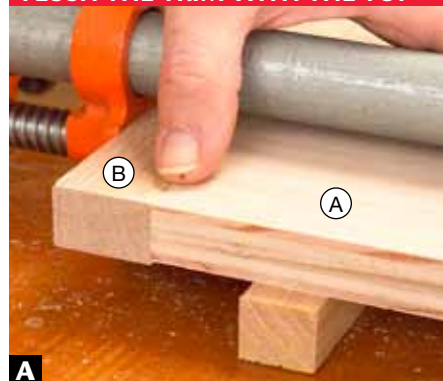
1 Cut the top/bottom panels (A) to size [Materials List, page 61]. Then cut the end trim (B, C) to size. Cut the front trim (D, E) $\frac{1}{4}$ " wider than listed.

2 Glue and clamp the narrow end trim (B) to the ends of the bottom panel (A) [Drawing 1] with the tops flush with the best surface of the plywood [Photo A]. **Note:** The plywood and $\frac{3}{4}$ " hardwood will not be the same thickness, but that's okay. After the glue dries, glue and clamp one piece of narrow front trim (D) to the front edge of the bottom panel.

3 Glue the wide end trim (C) flush with the best surface of the top panel (A). Glue and clamp one piece of wide front trim (E) to the front edge of the top panel.

4 Clamp the bottom panel assembly (A/B/D) to your bench. Mark the curve centerline and ends on the narrow

FLUSH THE TRIM WITH THE TOP



A Raise the plywood panel (A) on a scrapwood spacer, and glue the narrow end trim (B) flush with the top of the bottom panel. The difference in thickness will be hidden later.



Overall dimensions:
30" wide × 14½" deep × 50½" high.

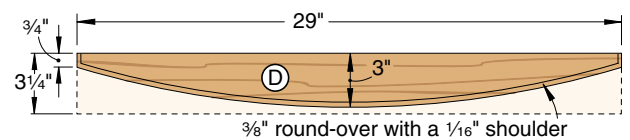
Blade and bits: Dado set, 3/8" round-over bit, 1/4" straight bit, 3/8" cove bit, rabbeting bit, 3/8" core box bit.

6 Rip two ¼"-wide spacer strips from ¾" MDF about 36" long. Bend and

B

Align edges.

2 NARROW FRONT TRIM



57

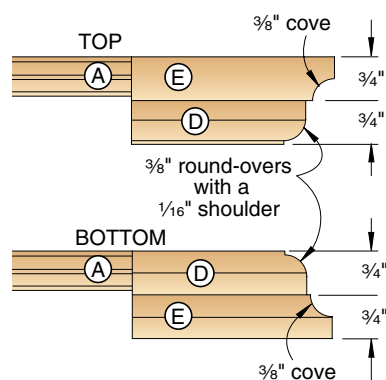
SHOP TIP

Trace smooth curves using a fairing stick

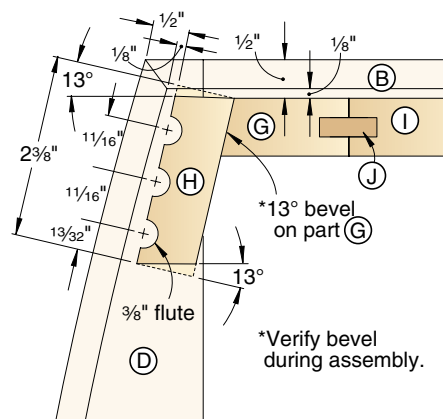
To draw a consistent curve on the narrow front trim (D), use a fairing stick made from medium-density fiberboard. (MDF bends evenly and easily because it has no grain.) First rip a $\frac{3}{8}$ "-wide strip of $\frac{3}{4}$ " MDF about 36" long. Place clamps on the narrow front trim so the inside edge of the fairing stick aligns with the end marks. At the centerline, pull the fairing stick to the center layout mark, and hold it in place. Then trace a curve along the inside edge.



3 TOP AND BOTTOM TRIM DETAIL



4 FRONT TRIM ASSEMBLY DETAIL



tape both tight against the curved edge of the bottom panel assembly (A/B/D) [Photo D]. Center the bottom panel assembly on the top panel assembly (A/C/E), and trace the curve on the top panel assembly.

7 Separate the top (A/C/E) and bottom (A/B/D) panel assemblies, and jigsaw the top-panel curve on the waste side. Double-face tape it to the bottom panel assembly, and pattern-route the curve on the top panel assembly flush with the spacer strips. Then remove the strips.

8 Double-face-tape the loose wide front trim piece (E) to the wide front trim piece of the top panel assembly (A/C/E). Trace the curve, jigsaw it, and rout the curve flush as you did in **Step 5**.

9 Double-face-tape the narrow front trim (D) to the top panel assembly (A/C/E) and the wide front trim (E) to the bottom panel assembly (A/B/D) as they'll look on the finished case [Drawing 1]. Rout cove profiles on the wide front trim, including the unmounted

end trim (C). Rout round-overs on the narrow front trim [Drawing 3] and end trim (B). Sand all parts to 220 grit.

Machine the side parts

1 Cut the rear stile (F) to size. Cut the front stiles (G) and the face stiles (H) $\frac{1}{4}$ " wider than listed. Save some scrap the same width and thickness as the front stiles and face stiles for test cuts.

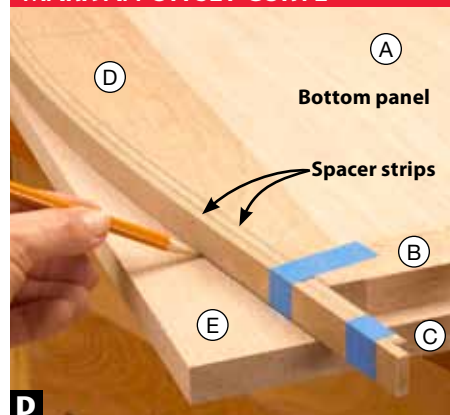
2 Tilt your tablesaw blade 13° from vertical, and rip one edge of both test pieces. Stand the scraps on end $\frac{1}{8}$ " from the edges of the routed profile at a corner of the bottom panel assembly (A/B/D) [Photo E]. If the test piece representing the face stile (H) doesn't match the angle of the curve in the narrow front trim (D), adjust the tablesaw blade angle, and make new test cuts until it does. Bevel-rip the front edge of each front stile (G) and both parallel edges of the face stiles [Drawing 4] to width.

3 To rout flutes in the face stiles (H), install a $\frac{3}{8}$ " core box bit (also called a

roundnose bit) in your table-mounted router, and adjust it to cut $\frac{3}{16}$ " above the router-table top. (If you don't have a router table, make the simple router table and fence shown on page 6.) Set the fence to center a flute on the front of the face stile, and rout a flute [Photo F]. Repeat for the other face stile.

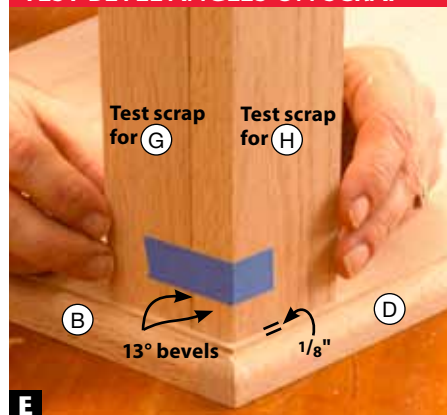
4 Adjust the fence, and rout flutes on both sides of the center flute on both

MARK AN OFFSET CURVE



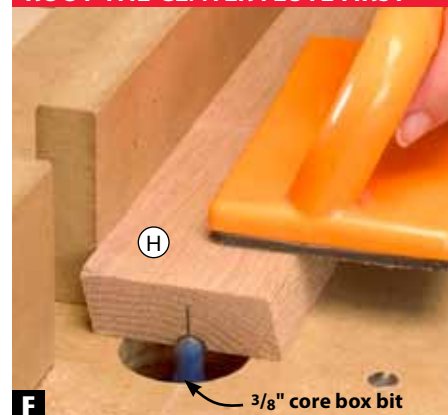
Taping two $\frac{1}{4}$ " strips to the narrow front trim (D) makes it easy to trace, cut, and pattern-route mating curves on the wide front trim (E).

TEST BEVEL ANGLES ON SCRAP



With the beveled test pieces taped together, check that the ends parallel the edges of the routed profile on the bottom panel assembly.

ROUT THE CENTER FLUTE FIRST



Keep the point of the beveled edge on the face stile (H) firmly against the router-table fence as you rout each flute.

face stiles (H) [Drawing 4].

5 Cut the side rails (I) to size. (Save some scraps the same thickness as the side rails.) Install a $\frac{1}{4}$ " straight bit in your table-mounted router, and adjust it to cut $\frac{3}{8}$ " deep. Attach a hardboard auxiliary fence to the router-table fence for a smooth surface, and use side-rail scraps to test and adjust the fence position until the groove is centered on the thickness of the scraps [Photo G].

6 Attach a stop to the router-table auxiliary fence $2\frac{1}{2}$ " from the bit center. Using a pushpad, rout a groove at both ends of each side rail (I) [Photo H] and on

the inside edges of the rear stiles (F) and front side stiles (G) [Drawing 5]. Leave your router table set up this way, without the stopblocks, for the shelves.

7 Cut the shelf back rails (N) to size. Then cut $3\frac{1}{2}$ "-wide blanks to length for each pair of shelf sides (O), and cut the shelf front rails (P) $\frac{1}{4}$ " oversize in width. Using the router-table setup from Step 6, rout $\frac{3}{8}$ "-deep centered grooves on the inside edges of the shelf back rails and front rails [Drawing 7].

8 Use a pushpad and backer block to rout grooves in the ends and then the edges of the shelf side blanks (O). With the grooved edges against the

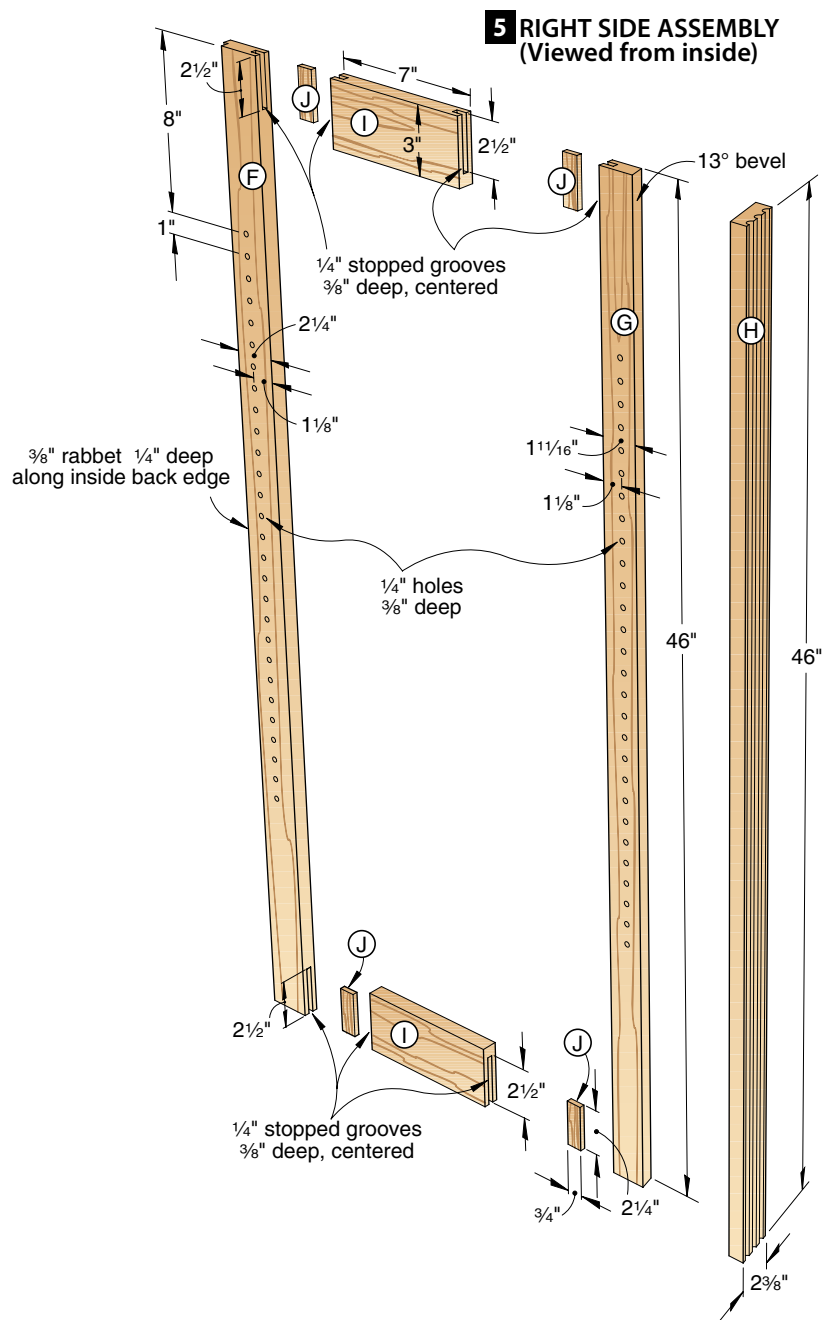
fence, rip the blanks to width [Drawing 7]. Then set them aside.

9 Lay out and drill shelf-pin holes in the rear and front stiles (F, G) [Drawing 5]. We used a handheld drill with the bit taped $\frac{3}{8}$ " from the tip as a depth stop. (Watch a free video on drilling shelf-pin holes at woodmagazine.com/videos.)

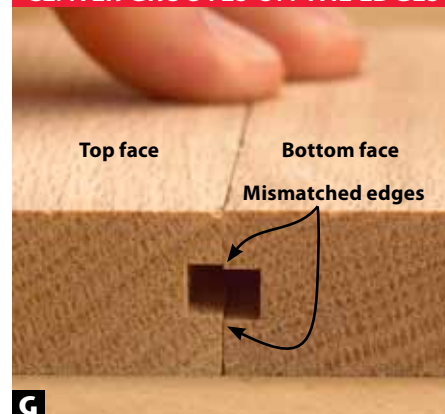
Assemble the sides

1 Make three $\frac{3}{4} \times 2\frac{1}{2} \times 4$ " scrapwood alignment blocks, and cover one face of each with clear packing tape. Double-face-tape the covered face of the blocks to the outside face of a front stile (G) near the ends and middle to keep the glue-up from slipping as it's clamped. Then glue and clamp a face stile (H) to a front side stile [Photo I]. Repeat for the other front stile and face stile.

2 Rip spline blanks (J) $\frac{1}{4}$ " wide from $\frac{3}{4}$ " hardwood. From one blank, cut eight splines $2\frac{1}{2}$ " long. Set aside the remaining blanks.

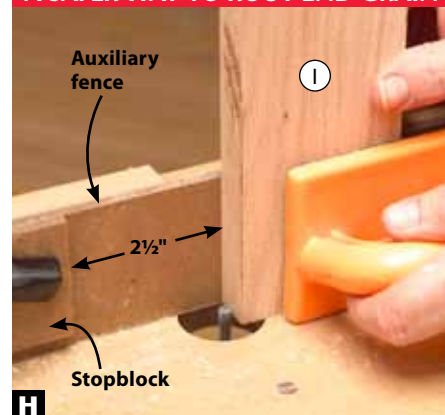


CENTER GROOVES ON THE EDGES



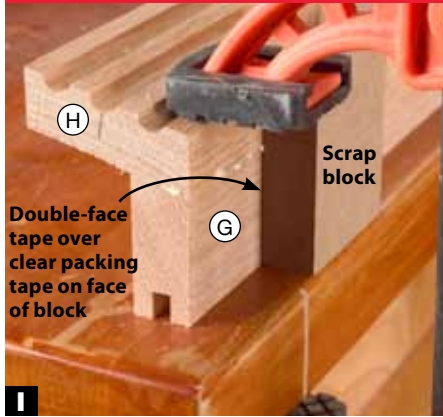
To test for a centered groove, rout test passes in two scraps. Turn one scrap upside down, and check whether the grooves align.

A SAFER WAY TO ROUT END GRAIN



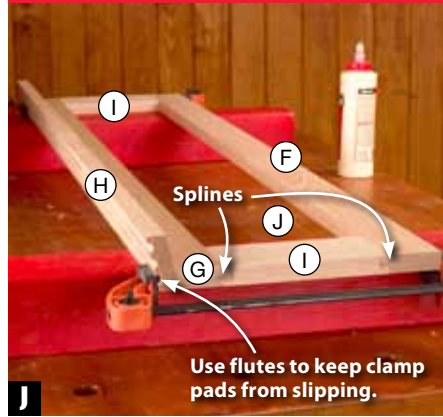
Double-face-tape an auxiliary fence to the router-table fence to keep the side rail (I) ends from catching as you rout.

GLUE THE FRONT STILES



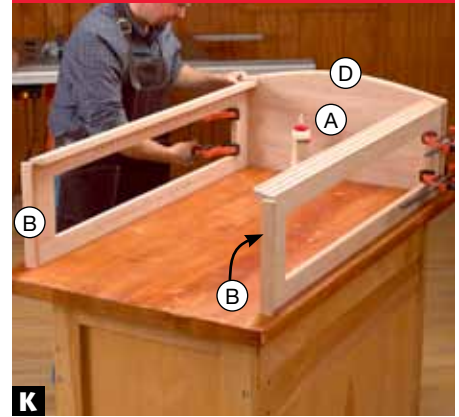
I Alignment blocks taped to the front stile (G) keep it from sliding out of position. Packing tape on the block keeps glue from sticking.

BUILD THE SIDE FRAMES



J Splines help align the stiles (F, G) with the rails (I) during assembly. Use clamps with padded faces to avoid marring the surfaces.

GLUE THE SIDES TO THE BASE



K Clamp the side assemblies to the bottom panel assembly (A/B/D) on a flat surface to avoid twisting the case.

3 Glue and insert splines (J) into the ends of the side rails (I). Then glue and clamp the side rails between the rear stile (F) and front face stile (G/H) [Photo J]. Repeat for the other side.

Complete the case

1 Glue and clamp a narrow end trim piece (B) with its inside edge flush with the inside face and the back of a side assembly (F/G/H/I) [Drawing 1]. Repeat for the other side assembly.

2 Glue and clamp the side assemblies to the bottom panel assembly, leaving a $\frac{1}{8}$ " reveal from the routed profile [Drawing 4, Photo K].

3 Glue and clamp the narrow front trim (D) to the side assemblies and narrow end trim (B) [Drawing 1].

4 Glue and clamp the top panel assembly to the narrow end trim (B) and narrow front trim (D) [Photo L]. Then glue and clamp the wide end trim (C) and the wide front trim (E) to the bottom panel assembly, with the end trim inside edges flush with the narrow end trim (B) edge.

5 Mount an auxiliary router base, as shown in the **Shop Tip**, next page top, and rout a $\frac{3}{8}$ " rabbet $\frac{1}{4}$ " deep in the inside edges of the rear stiles (F) and the top and bottom panel assemblies.

6 Cut the back (K) to fit the rabbeted opening. Then use a jigsaw and sanding block to round the corners. Drill and screw the back in

place. (For the #8 screws, drill $\frac{5}{32}$ " shank holes and $\frac{7}{64}$ " pilot holes.)

7 Laminate two pieces of $\frac{3}{4} \times 4 \times 12$ " oak to make a $1\frac{1}{2}$ "-thick blank for the front (L) and back (M) feet. Cut the feet to size and shape [Drawings 1 and 6].

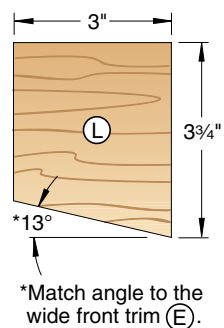
8 Glue and clamp the front feet (L) and back feet (M) $\frac{1}{8}$ " from the edges of the bottom wide end trim (C) and wide front trim (E).

Now make three shelves

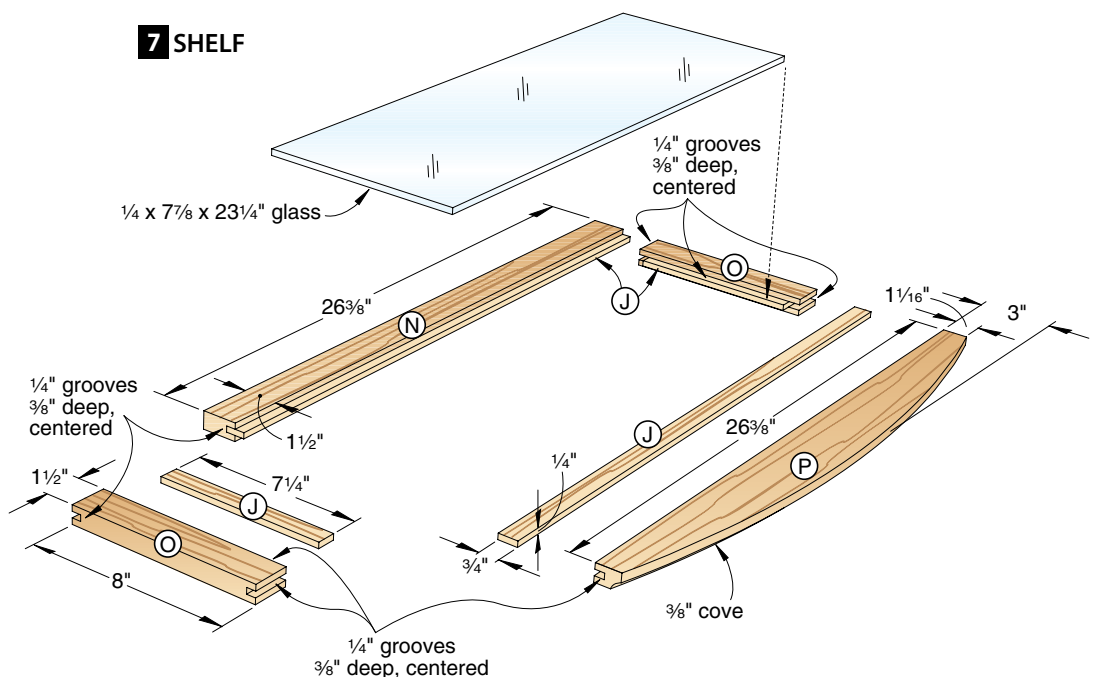
1 Cut splines (J) the length of the shelf back rails (N) and shelf front rails (P). Glue and clamp splines into the grooves in the rails [Drawing 7].

2 Glue and clamp the shelf back rails (N), shelf sides (O), and shelf front rails (P) [Drawing 7]. After the glue dries, cut splines to fit the shelf-side grooves.

6 FRONT FOOT



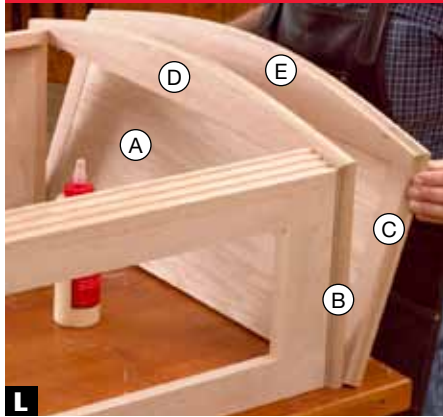
7 SHELF



Center, glue, and clamp them in place.

3 Use a fairing stick to mark the curve [Drawing 7] on one shelf front (P) on the assembled shelf frame (N/O/P). Jig-

ADD THE TOP PANEL ASSEMBLY



L Glue and clamp the top panel assembly centered between the narrow end trim (B) on the side assemblies.

SHOP TIP

No tipping allowed

Rabbeting a $\frac{3}{4}$ "-wide edge can leave bumps and gouges if the router wobbles. Stabilize it with a $\frac{3}{4}$ "x6x48" auxiliary base that rests on opposite edges of the case. Drill a centered $1\frac{1}{2}$ "-diameter bit hole in from one end a distance half the width of your router base. Use the same method as for mounting a router in the shop-built table on *page 6* to mount it on the auxiliary base. Now your router will feel like it's supported on a tabletop, not a tightrope.



Auxiliary router base

saw on the waste side, and sand to the line. Trace the curved-front shelf onto the other two shelf frames, then jigsaw on the waste side, and pattern-route the curves to match the first shelf.

4 Insert a $\frac{3}{8}$ " cove bit into a handheld router, and rout the bottom front edge of each shelf front rail (P). Then cut $\frac{1}{4}$ " glass panels to fit within the shelf

frame resting on the splines (J).

5 Remove the back and shelves from the case and the glass from the shelves, then finish-sand all parts to 220 grit. Apply stain (we used Varathane Mission Oak) and three coats of satin polyurethane. Sand with 320-grit abrasive between coats. Now you're ready to show off your keepsakes and your

Written by **Bob Wilson** with **Jeff Mertz**

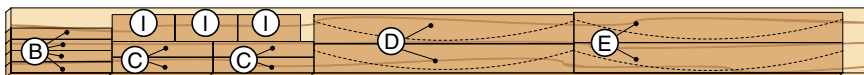
Project design: **Jeff Mertz**

Illustrations: **Roxanne LeMoine**; **Lorna Johnson**

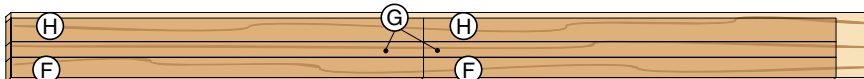
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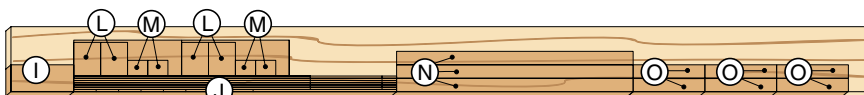
Cutting Diagram



$\frac{3}{4}$ x $7\frac{1}{4}$ x 96" Oak (5.3 bd. ft.)



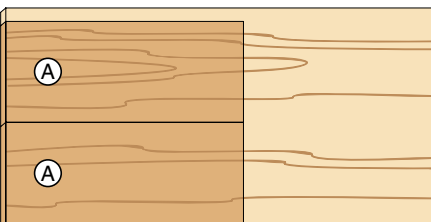
$\frac{3}{4}$ x $7\frac{1}{4}$ x 96" Oak (5.3 bd. ft.)



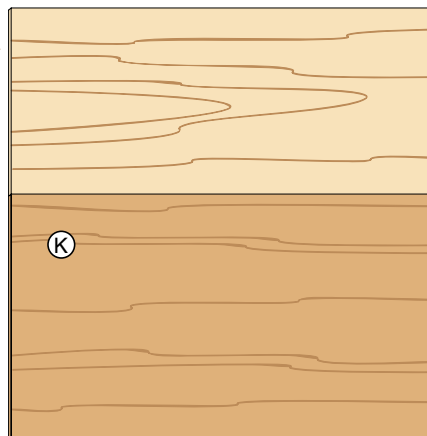
$\frac{3}{4}$ x $7\frac{1}{4}$ x 96" Oak (5.3 bd. ft.)



$\frac{3}{4}$ x $3\frac{1}{2}$ x 96" Oak (2.7 bd. ft.)



$\frac{3}{4}$ x 24 x 48" Oak plywood



$\frac{1}{4}$ x 48 x 48" Oak plywood

Materials List

Carcase	FINISHED SIZE			Matl.	Qty.	
	T	W	L			
A	top/bottom panels	¾"	11 ¼"	26 ½"	OP	2
B	narrow end trim	¾"	1 ¼"	11 ¼"	O	4
C	wide end trim	¾"	1 ¾"	11 ¼"	O	4
D*	narrow front trim	¾"	3"	29"	O	2
E*	wide front trim	¾"	3 ½"	30"	O	2
F	rear stiles	¾"	2 ¼"	46"	O	2
G*	front stiles	¾"	1 ⅙"	46"	O	2
H*	face stiles	¾"	2 ⅜"	46"	O	2
I	side rails	¾"	3"	7"	O	4
J	spline blanks	¼"	¾"	36"	O	7
K*	back	¼"	27 ¼"	47 ½"	OP	1
L*	front feet	1 ½"	3 ¾"	3"	LO	2
M*	back feet	1 ½"	1 ¾"	2 ¼"	LO	2
Shelves (3)						
N	shelf back rails	¾"	1 ½"	26 ⅜"	O	3
O*	shelf sides	¾"	1 ½"	8"	O	6
P*	shelf front rails	¾"	3"	26 ⅜"	O	3

*Parts initially cut oversize. See the instructions.

Materials key: OP—oak-veneer plywood, O—oak, LO—laminated oak.

Supplies: $\frac{1}{4}$ "x7 $\frac{1}{8}$ "x23 $\frac{1}{4}$ " glass (3), shelf supports (12), #8x $\frac{3}{4}$ " flathead wood screws.

Portable Router Table

Here's your low-cost ticket to accurate, convenient, and safe table-mounted routing.

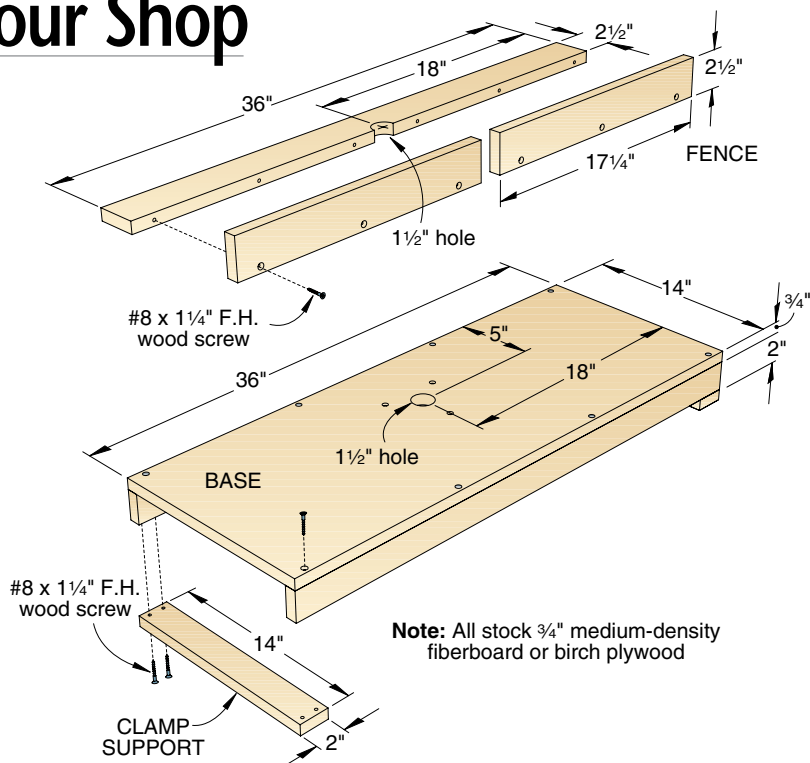
You can spend a grand or more on a full-featured router table, but this super-simple version helps you tackle most of the same jobs for just a few bucks. You need only a quarter-sheet of $\frac{3}{4}$ " MDF or plywood and a few hours of shop time.

With this table, you can work without fear of a handheld router tipping on a narrow edge, rout profiles without a bearing-guided bit, and handle tricky jobs, such as routing grooves into work-piece ends.

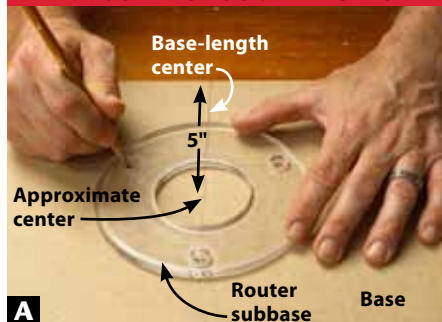
To make one, first cut all of its parts to size. At the center of the base along its length, measure 5" from one edge. Visually center your router subbase there, and mark mounting-hole centers [Photo A]. Using a straightedge, draw connecting lines between the hole centers to form a triangle. Now draw a line from one corner to the center of the opposite side, splitting the triangle [Photo B]. Repeat for the other corners and sides. The lines intersect at the precise router subbase center.

Using a Forstner bit, drill a $1\frac{1}{2}$ " hole at the intersection of the lines. Then drill countersunk holes for machine screws that fit your router base. (The ones that come with your router will be too short, so buy screws $\frac{3}{4}$ " longer than the originals.) Now glue and screw the parts together to form the base and fence. Mount your router (without the subbase) on the underside, lay the table on two sawhorses, clamp the fence in position, and you're ready to rout. 🌲

Project design: **Jeff Mertz**
Illustration: **Roxanne LeMoine**

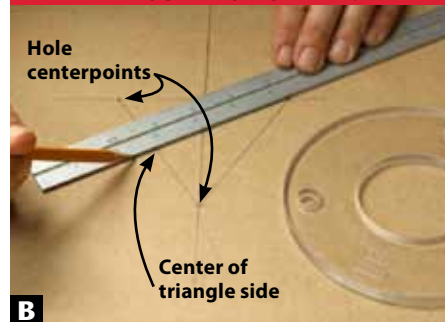


MARK SUBBASE SCREW HOLES



A Draw a line at the base-length center. Then rough-position the base 5" from the edge and mark the base mounting-hole centers.

FIND THE SUBBASE CENTER



B Draw a line between each triangle corner and its opposite side center to mark where to drill the router bit opening.

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